## REMARKS

Claims 1-39 are pending. Independent claims 1, 13 and 25 have been amended as described below, and new claims 37-39 have been added. The title has been amended as well, as required by the Examiner. The new title is indicative of the invention. Reconsideration is respectfully requested in light of the amendments and remarks made herein.

With respect to the Information Disclosure Statements (IDSs) submitted by applicants on June 10, 2002, June 4, 2003 and July 18, 2003 respectively, applicants note that the Examiner has acknowledged those IDSs but has not returned initialed and signed copies of the corresponding PTO-1449 forms to applicants. Thus, applicants respectfully request that the Examiner do so.

Turning now to the art rejections, claims 1, 2, 9-14, 21-26 and 33-36 have been rejected under 35 U.S.C. § 102(b) based on U.S. patent 4,488,245 to *Dalke et al.* (*Dalke*). The remaining claims stand rejected under 35 U.S.C. § 103(a), claims 3, 15 and 27 based on *Dalke* in view of U.S. patent 6,628,842 to *Nagao* and claims 4-8, 16-20 and 28-32 based on *Dalke* in view of U.S. patent 6,198,469 to *Tjandrasuwita*.

*Dalke* is directed to a color detection and correction/modification process which involves comparing color signals representing luminance ($l$ or $C_1$) and chrominance ($C_2$ and $C_3$) values obtained from a color image to a predefined $C_1$, $C_2$, $C_3$ color space and correcting the input signals accordingly. This is an adjustment within the same color space. The output color that is ultimately produced is then mapped to the output device color space, e.g., RGB.

Applicants' claimed invention is different. It does not involve an adjustment within a 3-D color space, nor does it involve a conversion from one 3-D color space to another. In applicants' invention, as set forth in each of the independent claims 1, 13 and 25, color data (typically representing 3 components such as RGB) for each pixel is converted to luminance data representing one of a plurality of luminance levels. A color available in the output device is then assigned to each pixel according to the luminance level represented by the luminance data of that pixel. The assigning of an output-device-available color is

based on luminance; chrominance or chromaticity characteristics of the pixel are not considered in assigning the output-device-available color. To underscore this point, each of the independent claims has been amended to exclude consideration of chrominance or chromaticity in the color assignment operation. In another aspect of applicants' invention, as set forth in newly added independent claims 37-39, one of N printable colors that are available in the output device is assigned to each pixel according to the luminance level represented by the luminance data of the pixel, so as to obtain processed data representing a multicolor image, wherein $N \geq 2$.

By using luminance information only to assign an output-device-available color, applicants' invention advantageously enables a quality reproduction of a color image to be printed on a limited-color printer, a type of printer that is often used in specialized business applications. That is, the invention is particularly effective in enabling a color image to be printed by a printer that has fewer colors than are present in the source image. The invention also enables quality, high speed printing with limited- or full-color printers, which is also important in certain business settings. Not only does *Dalke* not disclose applicants' claimed invention, his invention also fails to offer the advantages of applicants' invention.

The secondary references applied by the Examiner do not offset the deficiencies in *Dalke*. *Tjandrasuwita's* frame-rate modulation method generates grey-scale shading data for STN displays in response to input color data using stored brightness-level waveforms. Up to 16 brightness levels may be stored. However, the process does not involve assigning a color available in an output device to each pixel in an input image according to luminance information of that pixel obtained via a conversion of the pixel's input color, e.g., conversion of it's RGB value to luminance data. *Nagao's* image processing technique is even farther removed from applicants' invention. *Nagao's* technique is applied to digital photos to enhance sharpness while maintaining a certain blurred sense. To better perform certain operations in connection with this process, *Nagao* suggests that an input image can be converted to image data on which visual sensitivities are reflected by applying weighting factors to the optical densities of the R, G and B components of the input image. The weighting factors $r$, $g$ and $b$

can be in the ratio of 3:6:1. The final result is not however a sum of weighted color intensity values, since *Nagao's* sum is further divided by $(r + g + b)$. Moreover, the weighting is not used to convert color data to luminance data.

Accordingly, it is respectfully submitted that each of the independent claims 1, 13, 25 and 37-39 is patentably distinguishable over *Dalke* taken alone or in combination with *Tjandrasuwita* and *Nagao*. It is further submitted that each of the dependent claims, which further defines or adds to the patentable set of features presented in its independent claim, is patentable for at least the same reasons as its independent claim.

In view of the foregoing amendments and remarks, applicants respectfully request favorable reconsideration of the present application.

Respectfully submitted,

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